GENERAL INDEX

A

Abies procera; *see* Fir, noble
Absorption, of CMU by velvet bean 65, of sodium arsenite and sodium monochloracetate into trunks of yellow birch and red spruce 73
Acrylic acid derivative, α-cyano-β(2,4-dichlorophenyl) acrylic acid (CDAA), growth-inhibiting effect on tomato, radish, soybean, sunflower, and marigold plants 193
Alfalfa, anatomy of flower and tripping mechanism 40
Alkaloids, morphine content in opium poppy affected by temperature and photoperiod 323
Amino acids, free, in sugar beet affected by growth-regulators 148; glutamic acid decarboxylase of squash and radish 86; of lupine callus grown in culture 364, of proteins and juice of orange 183
Anatomy, comparative, of flax infected with curly-top or aster-yellows virus 305; of alfalfa flower 40, of barley, soybean, tomato, and onion affected by 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) 1, of cultured lupine callus 359, 364, of roots of wheat seedlings affected by cathode rays 281, of root system in noble fir affected by pruning 221, of tomato affected by zinc deficiency 52; *see also* Embryology
Antimicrobial substances, in chlorophyllose plants growing in Florida 250
Apomixis, in Pennisetum ciliare 209
Aster-yellows virus, anatomical effects on flax 305
Auxin; *see* Growth-regulators *and* Indoleacetic acid
Azalea, species incompatibility and embryology 234

B

Barley, growth inhibited by 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) 1
Bean, effects of temperature on mobilization of 2,4-D in leaves in darkness 261; velvet, *see* Stizolobium
Beet, garden, effect of sodium bicarbonate on growth and chlorosis 201; sugar, effect of maleic hydrazide and/or 2,4-D on free amino acids 148
Benzothiazol-2-oxyacetic acid, effect on maturation of grapes 266
Betula lutea; *see* Birch
Bicarbonate ion, effect in substrate on iron, phosphorus, and cations in beet leaves 201
Birch, yellow, penetration of sodium arsenite and sodium monochloroacetate into trunk 73
Boll, William G., Effect of sucrose concentration, length of passage, minor element nutrition, and pH value on growth of excised tomato roots 156
Boron, no effect on activity of glutamic acid decarboxylase in radish 86
Borthwick, H. A., Photoperiodic responses of hemp, 14
Bourdeau, Philippe F., Virgin hemlock forest segregates in the Joyce Kilmer Memorial Forest of western North Carolina 340
Bromus inermis, fertility affected by cytological disturbances 293
Brown, J. W., Influence of sodium bicarbonate on the growth and chlorosis of garden beets 201
Bryophytes, chromosome number and behavior in arctic mosses 93

C

Cacti, cytology of Mammillaria and associated genera 163
Calcium, in beet leaves unaffected by bicarbonate level in substrate 201
Callus, lupine, cultured from excised portions of embryos 359, 364
Cannabis sativa; *see* Hemp
Carbon 14, tagged on 2,4-D immobilized in bean leaves in darkness 261
Carlton, William M., Some effects of zinc deficiency on the anatomy of the tomato 52
Carnahan, H. L., Effects of variables in weather and their interaction on metaphase cells in root tips of grasses 82
Casimiroa edulis; *see* Sapote
Cathode rays, effect on germination and early growth of wheat 281
CDAA; *see* Acrylic acid
Cenchrus setigerus, apomixis 209
Chlorophenoxy compounds, effects, of alpha-ortho-chlorophenoxypropionic acid on sugar-cane stem cuttings 172, 274, of 2,4-D on free amino acids in sugar beets 148, on tassel, ear, and tiller development in maize 29; effects of temperature on the immobilization of 2,4-D in bean leaves in darkness 261
3-(*p*-Chlorophenyl)-1,1-dimethylurea, effect, on barley, soybean, tomato, and onion 1, on velvet bean 65
Chlorosis, in beet affected by sodium bicarbonate 201; induced by 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) in barley, soybean, tomato, and onion 1; in flax infected with aster-yellows disease 305
Christoph, Roy J., Responses of plants to the herbicide 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) 1
Chromosomes, mitotic frequency in grass root tips 82; numbers, in arctic mosses 93, in Mammillaria and associated genera 163, in Pennisetum ciliare 209; orientation in Sorghum purpureo-sericeum 369
Chrysanthemum leucanthemum, megagametophyte development 243
Citrus, orange, amino acid composition of proteins and juice 183
CMU; *see* 3-(*p*-Chlorophenyl)-1,1-dimethylurea
Cocklebur; *see* Xanthium
Cockroaches, infected with Herpomyces (Laboulbeniales) 195
Copper, effect on growth of excised tomato roots 156
Corn; *see* Zea mays
Cotyledons, photoperiodic sensitivity in Xanthium 199

Creech, John L., An embryological study in the Rhododendron subgenus Anthodendron Endl. 234
Cruzado, H. J., Studies of the absorption, translocation, and action of CMU 65
Curly-top virus, anatomical effects on flax 305
Cuticle, effect of thickness on absorption of CMU 65
Cytogenetics, orientation of interchange complexes and quadrivalents in Sorghum 369; *see also* Chromosomes
Cytology, comparative, of seven strains of Pennisetum ciliare 209; effect of disturbances on fertility of Bromus inermis 293; method for procuring soil-free root tips 291; of Mammillaria and associated genera 163; *see also* Chromosomes *and* Embryology

D

2,4-D; *see* Chlorophenoxy compounds *und* Growth-regulators
Dactylis glomerata; *see* Grass
Dark effect, on 2,4-D immobilization in bean leaves at high temperatures 261
Dawsey, Charles D., A pseudomonofolious pine 292
Daylength; *see* Photoperiod
Debarking, chemical, of yellow birch and red spruce 73
Diurnal variation, in meiosis in arctic mosses 93, in metaphase cells in root tips of grasses 82
Dungan, G. H., Some effects of certain plant growth substances on maize 29

E

Embryology, of Cenchrus setigerus and Pennisetum ciliare 209, of Chrysanthemum leucanthemum 243, of Rhododendron subgenus Anthodendron 234
Embryos, lupine, excised portions cultured 359, 364
Endosperm development, in Pennisetum ciliare 209, in Rhododendron 234
Enzymes, glutamic acid decarboxylase of squash and radish 86
Ethylene, effect with and without indoleacetic acid on growth of sugar-cane cuttings 172

F

Fertility, of Bromus inermis, affected by cytological disturbances 293
Festuca elatior; *see* Grass
Fir, noble, regeneration of injured root systems 221
Fisk, Emma L., Responses of plants to the herbicide 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) 1
Flax, comparative anatomical effects of curly-top and aster-yellows viruses 305
Floral induction and initiation in Xanthium 133, 142, 199
Flower-tripping mechanism in alfalfa 40
Flowering, of hemp affected by photoperiod, light intensity, temperature, and nitrogen nutrition 14, of maize affected by growth-regulators 29, of marigold plants delayed by an acrylic acid derivative 193
Fults, Jess L., Effects of maleic hydrazide and 2,4-dichlorophenoxyacetic acid on the free amino acids in sugar beets 148
Fungi, cockroaches infected with Herpomyces (Laboulbeniales) 195

G

Garber, E. D., Cytogenetics of Sorghum. I. The orientation of interchange complexes and quadrivalents at metaphase I in S. purpureo-sericeum 369
Gausman, H. W., Some effects of certain plant growth substances on maize 29
Germination, of wheat affected by cathode rays, 281
Girolami, Guido, Comparative anatomical effects of the curly-top and aster-yellows viruses on the flax plant 305
Glutamic acid decarboxylase, in squash and radish 86
Grapes, maturation delayed by benzol-2-oxyacetic acid 266
Grass, apomixis in Pennisetum ciliare 209; cytological disturbances influencing fertility in Bromus inermis 293; effects of variables in weather on metaphase cells in root tips of orchard grass and meadow fescue 82
Graumann, H. O., Anatomical structure of the alfalfa flower and an explanation of the tripping mechanism 40
Growth, effects, of cathode rays on wheat 281, of curly-top or aster-yellows virus on flax 305, of growth-regulators on maize 29, of sodium bicarbonate on beet 201, of temperature and photoperiod on opium poppy 323, of various factors on excised tomato roots 156, on sugar-cane stem cuttings 172, 274, of zinc deficiency on tomato 52; inhibition, of barley, soybean, tomato, and onion by 3-(*p*-chlorophenyl)-1,1-dimethylurea 1, (CMU) of Staphylococcus aureus, Pseudomonas aeruginosa, and Candida albicans by extracts of chlorophyllose plants 250, of tomato, radish, sunflower, and soybean by acrylic acid derivative 193, of velvet bean by CMU 65; of excised portions of lupine embryo grown in culture 359, 364; seasonal, related to root regeneration in noble fir 221
Growth-regulators, effects, of an acrylic acid derivative on various plants 193, of 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) on barley, soybean, tomato, and onion 1, on velvet bean 65, of 2,4-D, 2,3,5-triiodobenzoic acid, naphthaleneacetic acid, and indoleacetic acid on tassel and ear development and on tillering in maize 29, of indoleacetic acid and/or alpha-ortho-chlorophenoxypropionic acid, with other compounds, on growth of sugar-cane cuttings 172, of maleic hydrazide and/or 2,4-D on free amino acids in sugar beets 148, of temperature on immobilization of 2,4-D in bean leaves in darkness 261; use, of benzothiazol-2-oxyacetic acid to delay maturity of grapes 266, of naphthaleneacetic acid in culture medium for growing lupine callus 359, 364

H

Hall, W. C., Influence of temperature and daylength on growth and sugar content of sugar cane following auxin treatment of cuttings 274; Response of sugar-cane cuttings to auxin treatment as modified by other applied compounds 172
Hamner, Karl C., Effect of darkness and indoleacetic acid following exposure to short day on the floral response of Xanthium, a short-day plant 133
Hay, R. E., Response of certain plant species to an acrylic acid derivative 193

Helianthus annuus; *see* Sunflower
Hemlock, virgin forest segregates in North Carolina 340
Hemp, photoperiodic responses 14
Herbicides, 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU), effects, on barley, soybean, tomato, and onion 1, on velvet bean 65; penetration of sodium arsenite and sodium monochloroacetate into yellow birch and red spruce 73; *see also* Growth-regulators
Hernandez, Alice R., The mechanism of apomixis in Pennisetum ciliare 209
Herpomyces (Laboulbeniales) infection of cockroaches 195
Hill, Helen D., Effects of variables in weather and their interactions on metaphase cells in root tips of grasses 82
Hood, S. L., Glutamic acid decarboxylase of squash and radish 86
Host specificity, in infection of cockroaches with Herpomyces (Laboulbeniales) 195
Hybridization, control of time of silking and anthesis in maize with growth-regulators 29; intersectional incompatibility in Rhododendron 234

I

Incompatibility, of Rhodendron japonicum and R. mucronatum 234
Indoleacetic acid, effects, on anthesis, silking, and tillering in maize 29, on sugar-cane stem cuttings 172, 274, with dark period, on flowering of Xanthium following exposure to short day 133
Indolebutyric acid, effects, on sugar-cane stem cuttings 274
Iron, chelated, availability, affected by pH level in growth of excised tomato roots 156; soluble, in beet leaves lowered in sodium bicarbonate culture 201
Irradiation; *see* Radiation, Light, *and* Photoperiod

J

Jennings, Peter B., The cotyledon in relation to photoperiodism in cocklebur 199

K

Khan, M. A., Influence of temperature and day-length on growth and sugar content of sugar cane following auxin treatment of cuttings 274; Response of sugar-cane cuttings to auxin treatment as modified by other applied compounds 172

L

Laboulbeniales, Herpomyces, infection of cockroaches 195
Larkin, R. A., Anatomical structure of the alfalfa flower and an explanation of the tripping mechanism 40
Leaves, pseudomonofolious, reported on sand pine 292
Lee, Addison E., Growth in culture of excised portions of lupine embryos 359; Potentially unlimited growth of lupine callus 364
Legumes, anatomy of alfalfa flower and tripping mechanism 40
Light; *see* Photoperiod *and* Radiation
Light intensity, effect of weather on metaphase cells in root tips of grasses 82; effect on flowering of hemp 14
Linum usitatissimum; *see* Flax
Livingston, Clark, Effects of maleic hydrazide and 2,4-dichlorophenoxyacetic acid on the free amino acids in sugar beets 148
Lockhart, James A., Effect of darkness and indoleacetic acid following exposure to short day on the floral response of Xanthium, a short-day plant 133
Loustalot, A. J., Studies on the absorption, translocation, and action of CMU 65
Lupine, growth in culture of excised portions of embryos of Lupinus hartwegii 359, 364
Lycopersicon; *see* Tomato

M

Madsen, Grace C., Occurrence of antimicrobial substances in chlorophyllose plants growing in Florida. II 250
Maize; *see* Zea
Maleic hydrazide, effect on free amino acids in sugar beets 148
Mammillaria, cytology 163
Marigold, dwarf, flowering delayed by an acrylic acid derivative 193
Martin, Richard W., Megagametophyte development in Chrysanthemum leucanthemum L. 243
Maturation, of grapes delayed by benzothiazol-2-oxyacetic acid 266
Medicago; *see* Alfalfa
Megagametophyte, of Chrysanthemum leucanthemum 243, of Pennisetum ciliare 209, of Rhododendron 234
Meiosis, in arctic mosses 93, in cacti 163, in Cenchrus setigerus and in Pennisetum ciliare 209; interchange complexes and quadrivalents in Sorghum purpureo-sericeum 369; irregularities in microsporogenesis in Bromus inermis 293
Microsporogenesis, cytological disturbances in Bromus inermis 293; in Pennisetum ciliare 209
Mika, Edward S., Studies on the growth and development and morphine content of opium poppy 323
Mitosis, diurnal variation in frequency in cacti 163, in grasses 82; in onion root tips, affected by 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) 1; in roots of wheat seedlings affected by cathode rays 281; method for procuring soil-free root tips 291
Molybdenum, effect on growth of excised tomato roots 156
Morphine content of opium poppy, affected by temperature and photoperiod 323
Morphology, of root system in noble fir affected by pruning 221; *see also* Anatomy *and* Embryology
Mosses, arctic, chromosome number and behavior 93
Mustard, Margaret J., Pollen production and seed development in the white sapote 189
Muzik, T. J., Studies on the absorption, translocation, and action of CMU 65

N

Naphthaleneacetate, sodium, effect on growth and sugar content of sugar-cane cuttings 274
Naphthaleneacetic acid, effect on anthesis, silking, and tillering in maize 29; used in culture of lupine callus 359, 364

Nielsen, Etlar L., Cytological disturbances influencing fertility in Bromus inermis 293
Nitrogen, effects, on flowering of hemp 14, on growth of sugar-cane cuttings 172; free amino acids in sugar beet affected by growth-regulators 148; total and soluble, in cultured lupine callus 364; *see also* Amino acids
North Carolina, hemlock forests 340

O

Onion, growth inhibited by 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) 1
Oosting, Henry J., Virgin hemlock forest segregates in the Joyce Kilmer Memorial Forest of western North Carolina 340
Opium, content in opium poppy affected by temperature and photoperiod 323
Orange, amino acid composition of proteins and juice 183
Oxalate, accumulated in leaves of beets grown in sodium bicarbonate culture 201

P

Papaver somniferum; *see* Poppy
Pates, Anne L., Occurrence of antimicrobial substances in chlorophyllose plants growing in Florida. II 250
Pathology, of flax infected with curly-top and aster-yellows viruses 305
Payne, Merle G., Effects of maleic hydrazide and 2,4-dichlorophenoxyacetic acid on the free amino acids in sugar beets 148
Pennisetum ciliare, apomixis 209
Phaseolus; *see* Bean
Phloem, degeneration in flax, caused by curly-top and aster-yellows virus infections 305
Phosphorus, in beet leaves from sodium bicarbonate culture 201; total, in cultured lupine callus 364
Photoperiod, effects, on flowering of hemp 14, on growth, development, and morphine content of opium poppy 323, on sugar-cane cuttings 274
Photoperiodism, floral initiation in Xanthium 133, 142, 199
pH value, effects, on activity of glutamic acid decarboxylase 86, on growth of excised tomato roots 156
Picea rubens; *see* Spruce
Pinus clausa, tree with pseudomonofolious leaves 292
Pollen production and sterility in white sapote 189
Pollination, of alfalfa and tripping mechanism of flower 40; intraspecific and reciprocal, of Rhododendron japonicum and R. mucronatum 234
Polyploidy, in arctic mosses 93, in Mammillaria, effect on stomatal size and frequency 163
Poppy, opium, effect of temperature and photoperiod on growth, development, and morphine content 323
Precipitation, and hemlock stands in North Carolina 340
Propagation, vegetative, of sugar cane affected by chemical treatment of cuttings 172, 274

R

Radiation, by X-rays, of Sorghum seed to produce cytogenetic alterations 369; effect of cathode rays on germination and early growth of wheat 281; *see also* Light *and* Photoperiod
Radioactive 2,4-D, used in study of effects of temperature on immobilization of 2,4-D in bean leaves in darkness 261
Radish, glutamic acid decarboxylase 86; growth inhibited by an acrylic acid derivative 193
Ranunculaceae, antimicrobial substances in extracts of certain species 250
Regeneration, of injured roots of noble fir 221
Remski, Sister Marie Fidelis, Cytological investigations in Mammillaria and some associated genera 163
Respiration, in sugar-cane cuttings, affected by treatment with auxin, stalk position of cutting, and variety 172
Rhododendron, occurrence in virgin hemlock forest segregates in North Carolina 340; subgenus Anthodendron, embryological study 234
Rice, Elroy L., Effects of temperature on the immobilization of 2,4-dichlorophenoxyacetic acid in bean leaves in darkness 261
Richards, A. Glenn, Infection of cockroaches with Herpomyces (Laboulbeniales). III. Experimental studies on host specificity 195
Ripening, of grapes delayed by benzothiazol-2-oxyacetic acid 266
Rohrbaugh, Lawrence M., Effects of temperature on the immobilization of 2,4-dichlorophenoxyacetic acid in bean leaves in darkness 261
Romberg, Paul F., A method for procuring large numbers of soil-free root tips 291
Root, initiation in sugar-cane cuttings affected by chemical treatment 172; of tomato, excised and cultured 156; regeneration in noble fir 221; tips, soil-free method for procuring 291; *see also* Growth
Rosaceae, antimicrobial substances in extracts of certain species 250

S

Sampling method, in hemlock forests in North Carolina 340
Sapote, white, pollen production and seed development 189
Scully, Norbert J., Characteristics and movement of the flowering stimulus from the induced leaf of Xanthium 142; Photoperiodic responses of hemp 14
Seed development, in white sapote 189
Seed-set, hybrid, facilitated in maize by growth-regulators 29; in Bromus inermis, affected by cytolgical disturbances 293
Sex, of flowers of hemp affected by photoperiod, light intensity, nutrition, and temperature 14
Sinclair, Walton B., A quantitative paper-chromatographic study of the amino acid composition of proteins and juice of the orange 183
Skok, John, Characteristics and movement of the flowering stimulus from the induced leaf of Xanthium 142
Smith, Frank H., Megagametophyte development in Chrysanthemum leucanthemum L. 243
Smith, Myrtle N., Infection of cockroaches with Herpomyces (Laboulbeniales). III. Experimental studies on host specificity 195
Snyder, L. A., The mechanism of apomixis in Pennisetum ciliare 209
Soderholm, L. H., Effect of cathode rays on germination and early growth of wheat 281

Sodium, accumulated in leaves of beets grown in socium bicarbonate culture 201
Sodium arsenite and sodium monochloroacetate, penetration into trunk of yellow birch and red spruce 73
Sorghum purpureo-sericeum, chromosome orientation 369
Soybean, growth inhibited, by an acrylic acid derivative 193, by 3-(chlorophenyl)-1,1-dimethylurea (CMU) 1
Speciation, in arctic mosses 93, in Mammillaria 163
Spruce, red, penetration of sodium arsenite and sodium monochloroacetate into trunk 73
Squash, glutamic acid decarboxylase 86
Steere, William C., Chromosome number and behavior in arctic mosses 93
Stizolobium deeringianum, affected by herbicide CMU 65
Stomata, size and frequency, relation to chromosome number in Mammillaria 163
Sucrose, effect on growth, of excised tomato roots 156, of sugar-cane cuttings 172
Sugar cane, growth of cuttings and sugar content affected by various factors 172, 274
Sunflower, growth inhibited by an acrylic acid derivative 193

T

Temperature, effects, of diurnal variations on growth, development, and morphine content of opium poppy 323, on activity of glutamic decarboxylase 86, on flowering of hemp 14, on growth and sugar content of sugar cane 274, on immobilization of 2,4-D in bean leaves in darkness 261, on metaphase cells in root tips of grasses 82; relation to vegetative and reproductive development in arctic mosses 93
Thiamin chloride, effect on growth of sugar-cane cuttings 172
Tillering, affected by growth-regulators, in maize 29, in sugar-cane cuttings 274
Tissue culture, of excised portions of lupine embryos 359, 364
Tomato, effects of zinc deficiency on anatomy 52; growth inhibited, by an acrylic acid derivative 193, by 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) 1; growth of excised roots 156
Translocation, of flowering stimulus in Xanthium 142, of 3-(*p*-chlorophenyl)-1,1-dimethylurea (CMU) in tomato 1, in velvet bean 65, of 2,4-D in bean leaves 261
2,3,5-Triiodobenzoic acid, effect on anthesis, silking, and tillering in maize 29
Tsuga; *see* Hemlock
Tumors, on roots of zinc-deficient tomato plants 52

U

Uhl, D. P., Response of certain plant species to an acrylic acid derivative 193

V

Vegetation, hemlock forests in North Carolina 340
Virus, comparative anatomical effects of curly-top and aster-yellows diseases on flax 305
Vitis vinifera; *see* Grapes

W

Wadleigh, C. H., Influence of sodium bicarbonate on the growth and chlorosis of garden beets 201
Walker, Elda R., Effect of cathode rays on germination and early growth of wheat 281
Warmke, H. E., The mechanism of apomixis in Pennisetum ciliare 209
Weaver, Robert J., Use of benzothiazol-2-oxyacetic acid to delay maturity of grapes 266
Wedding, Randolph T., A quantitative paper-chromatographic study of the amino acid composition of proteins and juice of the orange 183
Wheat, germination and early growth affected by cathode rays 281
Wilcox, Hugh, Preliminary study of the penetration of sodium arsenite and sodium monochloroacetate solutions into the trunks of yellow birch and red spruce 73; Regeneration of injured root systems in noble fir 221
Woods, Frank W., A pseudomonofolious sand pine 292
Wound healing, in injured roots of noble fir 221

X

Xanthium, characteristics and movement of flowering stimulus from induced leaf 142; cotyledon in relation to photoperiodism 199; floral response to darkness and indoleacetic acid following exposure to short day 133
X-irradiation of Sorghum seed to produce cytogenetic alterations 369

Z

Zea mays, development of tassel and ear affected by growth-regulators 29
Zinc, effects of deficiency on anatomy of tomato 52
Zuck, Robert K., The cotyledon in relation to photoperiodism in cocklebur 199